

CLAIMS

1. A magnesium compound obtained by reacting a metal magnesium, an alcohol, and at least 0.0001 gram atoms, in terms of the halogen atom relative to one gram atom of magnesium, of a halogen and/or a halogen-containing compound, at 30 to 60°C.

2. The magnesium compound as claimed in claim 1, wherein the halogen is iodine.

3. The magnesium compound as claimed in claim 1, wherein the halogen-containing compound is magnesium chloride.

4. A solid magnesium compound substantially comprising a magnesium alkoxide, of which the particle size distribution index (P) represented by the following formula (I-1) is smaller than 4.0, $P < 4.0$:

$$P = (D_{90}/D_{10}) \quad (I-1)$$

(wherein D_{90} indicates the particle diameter of the compound particles corresponding to the cumulative weight fraction of 90 % in the particle size distribution thereof computed from the light transmittance through a suspension of the compound particles in a hydrocarbon; and D_{10} indicates the particle diameter of the compound particles corresponding to the cumulative weight fraction of 10 % therein.)

5. An olefin polymerization catalyst comprising (A) a solid catalyst component prepared by contacting (a) the magnesium compound of any of claims 1 to 4 with (b) a titanium

compound of the following general formula (I-3), and (B) an organometallic compound:



(wherein X indicates a halogen atom; R indicates a hydrocarbon group having from 1 to 10 carbon atoms, and R's may be the same or different; and n indicates an integer of from 0 to 4.)

6. An olefin polymerization catalyst comprising (A) a solid catalyst component prepared by contacting (a) the magnesium compound of any of claims 1 to 4, (b) a titanium compound of the following general formula (I-3) and (c) an electron donor compound with each other, (B) an organometallic compound, and (C) a third component of an electron donor compound:



(wherein X indicates a halogen atom; R indicates a hydrocarbon group having from 1 to 10 carbon atoms, and R's may be the same or different; and n indicates an integer of from 0 to 4.)

7. A method for producing olefin polymers, which comprises polymerizing an olefin in the presence of the olefin polymerization catalyst of claim 5 or 6.

8. A magnesium compound obtained by reacting a metal magnesium, an alcohol, and at least 0.0005 gram atoms, in terms of the halogen atom relative to one gram mol of magnesium, of a halogen and/or a halogen-containing compound, in the presence of a saturated hydrocarbon compound.

9. The magnesium compound as claimed in claim 8, wherein the halogen is iodine.

10. The magnesium compound as claimed in claim 8, wherein the halogen-containing compound is magnesium chloride.

11. A solid magnesium compound substantially comprising a magnesium alkoxide, of which the particle size distribution index (P) represented by the following formula (II-1) is smaller than 4.0, $P < 4.0$:

$$P = (D_{90}/D_{10}) \quad (\text{II-1})$$

(wherein D_{90} indicates the particle diameter of the compound particles corresponding to the cumulative weight fraction of 90 % in the particle size distribution thereof computed from the light transmittance through a suspension of the compound particles in a hydrocarbon; and D_{10} indicates the particle diameter of the compound particles corresponding to the cumulative weight fraction of 10 % therein.)

12. An olefin polymerization catalyst comprising (A) a solid catalyst component prepared by contacting (a) the magnesium compound of any of claims 8 to 11 with (b) a titanium compound of the following general formula (II-3), and (B) an organometallic compound:



(wherein X indicates a halogen atom; R indicates a hydrocarbon group having from 1 to 10 carbon atoms, and R's may be the same

or different; and n indicates an integer of from 0 to 4.)

13. An olefin polymerization catalyst comprising (A) a solid catalyst component prepared by contacting (a) the magnesium compound of any of claims 8 to 11, (b) a titanium compound of the following general formula (II-3) and (c) an electron donor compound with each other, (B) an organometallic compound, and (C) a third component of an electron donor compound:



(wherein X indicates a halogen atom; R indicates a hydrocarbon group having from 1 to 10 carbon atoms, and R's may be the same or different; and n indicates an integer of from 0 to 4.)

14. A method for producing olefin polymers, which comprises polymerizing an olefin in the presence of the olefin polymerization catalyst of claim 12 or 13.